



FIG. 1

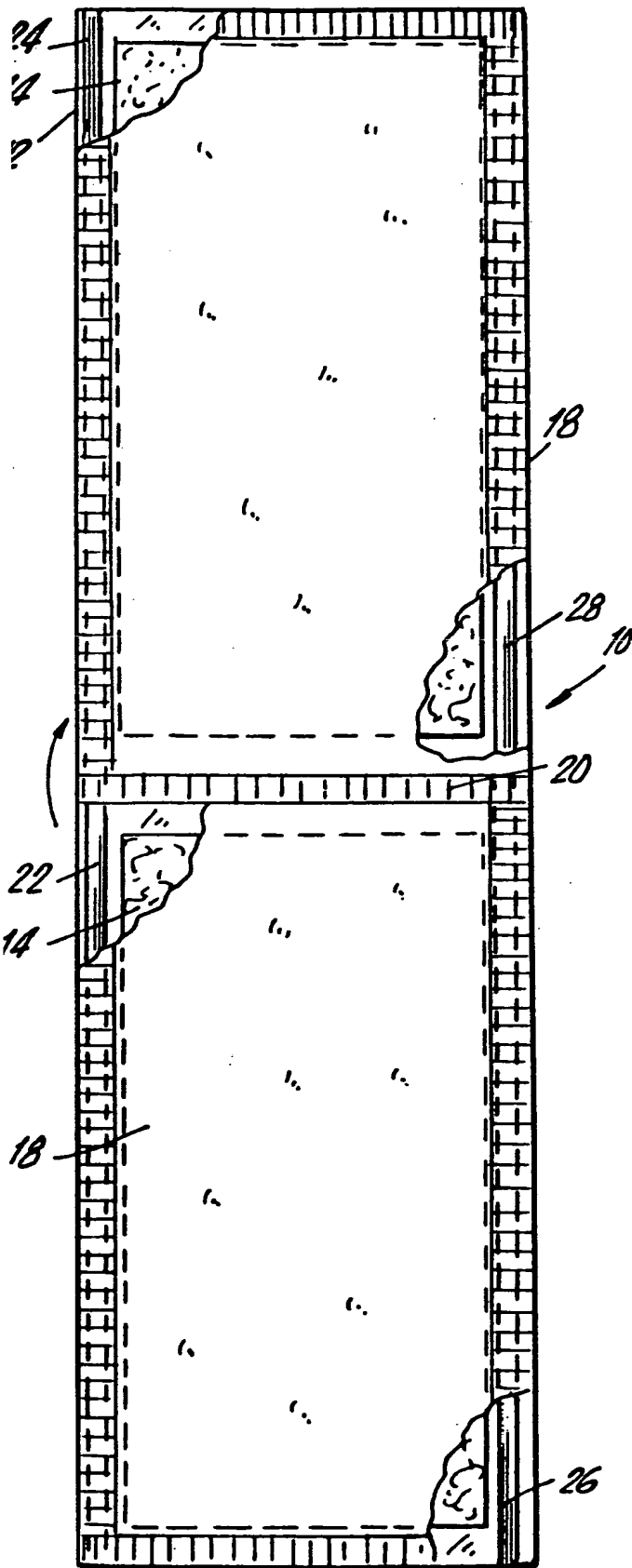


FIG. 2

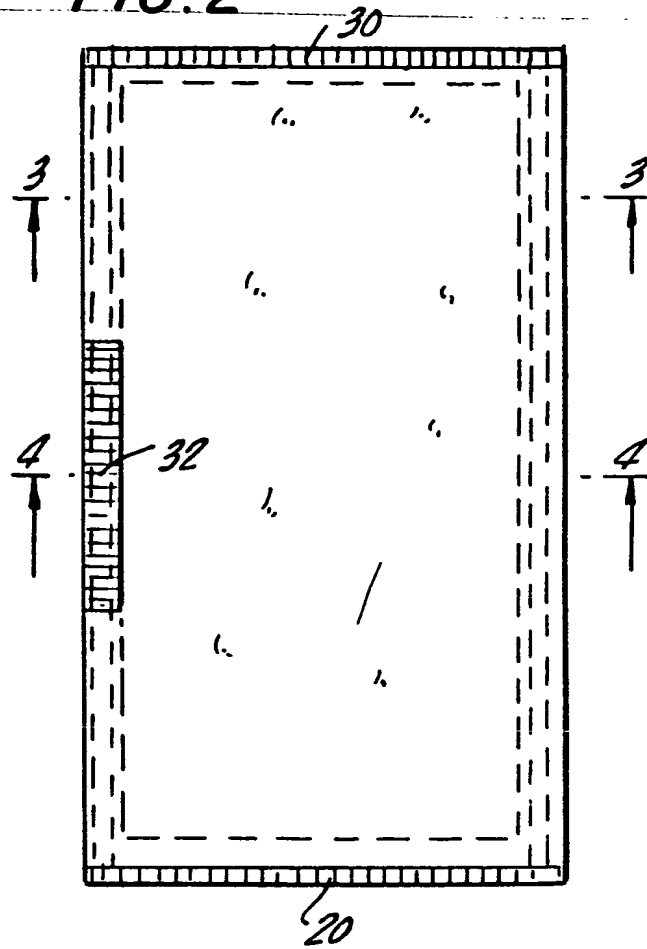


FIG. 3

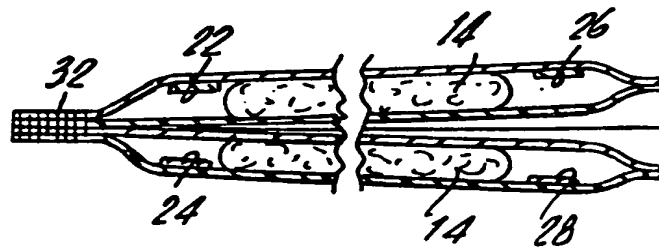
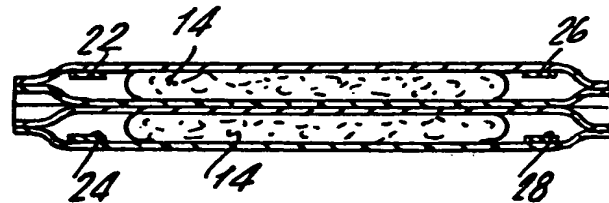


FIG. 4



FIG. 5

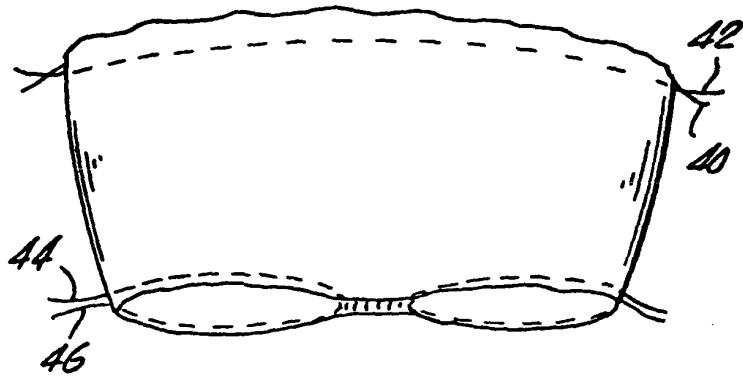


FIG. 6

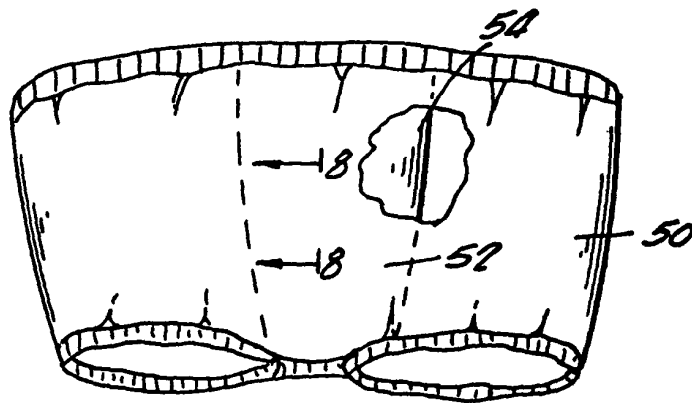


FIG. 7

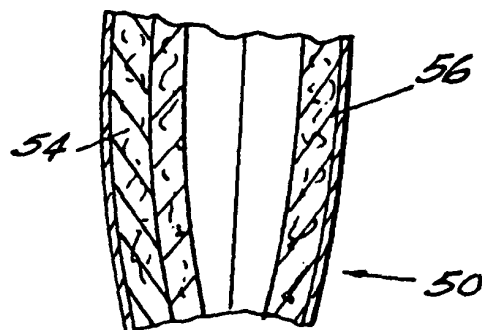
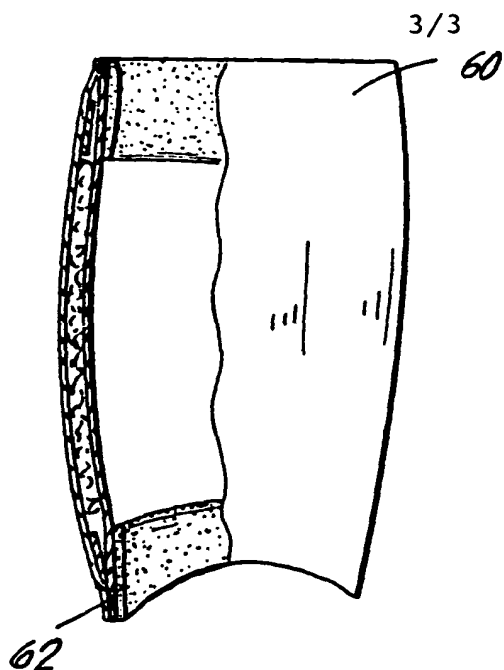
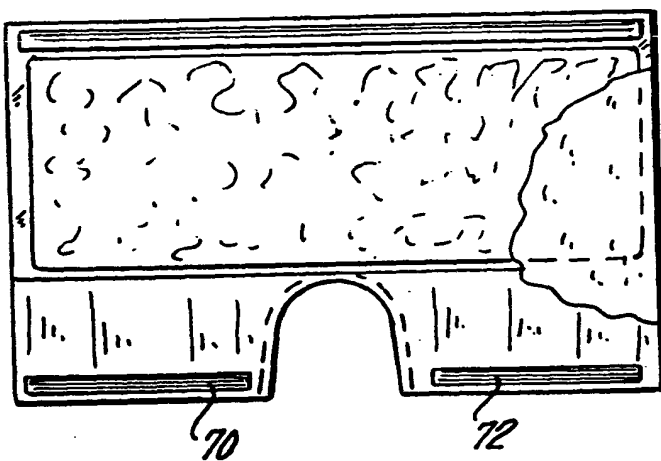


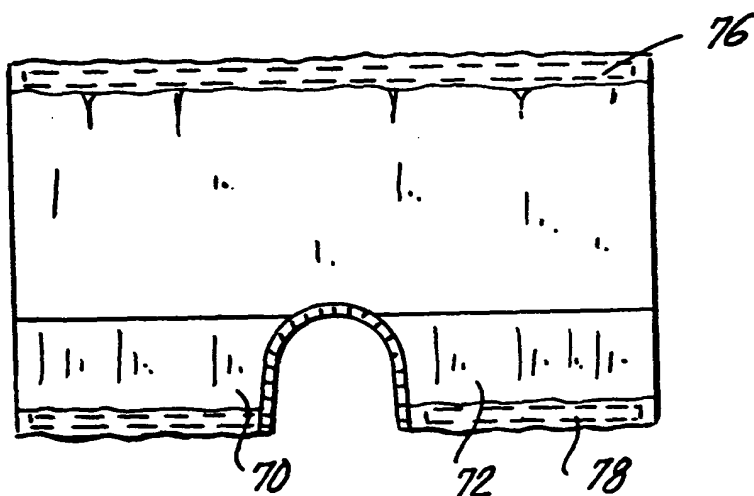
FIG. 8



**FIG. 9**



**FIG. 10**



**FIG. 11**

## SPECIFICATION

## Disposable panty and method

The present invention relates to an elasticized disposable panty and to a method of making an elasticized disposable panty.

In the past elasticized diapers have been developed for use only with contoured shaped configurations such as an hour-glass shape such as that disclosed in the United States Patent to Buell, No. 3,860,003, issued 14th January, 1975, for "Contractable Side Portions for Disposable Diaper" wherein elastic strips are secured to the crotch portions of the diaper to provide elasticized crotch seals for securement over the legs of the infant to prevent loss of fluid from the interior of the diaper along the legs of the infant.

Elasticized waistbands are common in panties but are not easily capable of being mass produced for use in elasticized diapers because of manufacturing difficulties. Furthermore, contoured diapers are difficult and expensive to manufacture.

Therefore specialized and complicated production equipment is required to contour a diaper and to provide an elasticized waistband for the diaper. Further, diapers so manufactured still require tape fasteners or other securing devices for holding the diaper on the infant or incontinent adult, and require time and technique or skill to assure even a reasonably secure fit.

The present invention overcomes the disadvantages of prior elasticized diapers by overcoming manufacturing difficulties, reducing fastening problems, providing for both waist and crotch seals, and providing for an inexpensive disposable panty which does not require elaborate cutting for contouring and which is comfortable on the wearer.

In accordance with the present invention, an elasticized panty is produced from a two panel configuration wherein one panel is folded over the other and the ends bonded together. Each panel is provided with a facing sheet facing the wearer, an absorbent pad, an impervious backing sheet with pairs of elasticized strips being secured to the sides of the said panels. One pair of the elasticized strips forms a waistband for a waist seal and for fitting the diaper on the wearer. The panels are further bonded to each other at a location adjacent each of the other pair of elasticized strips to form thigh bands functioning as crotch seals. The absorbent pads for each panel may be of different thicknesses and additional insert pads may be used as desired.

The invention may be put into practice in various ways and a number of embodiments will be described by way of example with reference to the accompanying drawings in which:

Figure 1 is a plan view of a pair of panels of a first embodiment of a disposable panty in accordance with the present invention during a stage of manufacture thereof with parts broken away for clarity;

Figure 2 is a plan view of the embodiment shown in Figure 1 at a later stage in the process

after the panels have been folded;

Figure 3 is a sectional view taken along the plane of line 3—3 in Figure 2;

Figure 4 is a sectional view taken along the plane of line 4—4 in Figure 2;

Figure 5 is a perspective view of the first embodiment of a disposable panty according to the invention;

Figure 6 is a view of a second embodiment of the invention employing elastic cords;

Figure 7 is a view of a third embodiment of a disposable panty employing a double pad;

Figure 8 is a detailed view of the third embodiment of a disposable panty taken along the plane of line 8—8 in Figure 7;

Figure 9 is a view of a fourth embodiment employing elasticized foam;

Figure 10 is a view of a fifth embodiment in the form of a disposable "Bermuda" panty having extended thigh portions; and

Figure 11 is a view of a sixth embodiment like Figure 10 employing extra foam material at the waist and thighs.

In the accompanying drawings like reference numerals designate similar parts throughout the various views. The reference numeral 10 generally designates in Figure 1 a long rectangular web from which the panty is manufactured on a conventional diaper machine.

The web 10 includes a backing sheet 12 onto which discrete spaced rectangular absorbent pads 14 are positioned in end to end relationship. These pads 14 may be formed of conventional wood fluff, cotton, or the like, with or without wadding sheets as desired and are slightly less wide and slightly less than half the length of the sheet 12. A facing sheet 16 overlies the pads and is bonded to the backing sheet along the peripheral edges thereof as at 18. The facing sheet is bonded to the backing sheet 12 along a line 20 transverse to and between the two pads 14.

The two pads 14 may be of the same or differing thicknesses or materials depending upon the settings of the diaper machine as desired.

Pairs of elasticized strips 22, 24 and 26, 28 are bonded by heat sealing, cold melt or hot melt adhesives, or any other bonding means to the backing sheet 12. As shown the elasticized strips are bonded to the inside surface of the backing sheet but the elasticized strips may be bonded, if desired, to the outer surfaces of the backing sheet 12.

After the two panels are formed as shown in Figure 1 they are folded around a line transverse to the pads along the space 20 between the pads so as to overlap and be coextensive and then the free ends are bonded at 30 by heat sealing, hot or cold melt adhesives or other adhesives as desired.

After the panels have been folded over and preferably simultaneously with the bonding at the end 30, the panels are bonded together by heat sealing or suitable adhesives at a location 32 medial between the ends 20 and 30 of the coextensive panels. This, as can be seen best in Figure 5, defines two thigh receiving openings 34,

36 with the strips 22, 24 defining thigh bands forming crotch seals and the elasticized strips 26, 28 forming a waistband defining a waist seal.

Figure 6 shows a second embodiment in which

- 5 the elasticized strips are in the form of elastic cords 40, 42, and 44, 46 which may then be adjustably tied for better fit and seal. These cords differ from the strips 22, 24, 26, 28 in not being bonded to the sheet 12 but lie in passages formed  
10 between the sheets 12 and 14 by parallel spaced weld or adhesive lines.

Figures 7 and 8 show a third embodiment in which a panty 50 has one or more additional pads 52 which are specifically located in the crotch

- 15 area. The pad 52 has a thick section 54 and a thin section 56 so that the diaper may be reversibly fitted depending on the sex of the wearer. The additional pad or pads 52 may be in the form of inserts as desired.

- 20 Figure 9 shows a fourth embodiment in which additional elasticized foam material 60 is disposed at the waist to provide for a better and more comfortable fit and additional elasticized foam material is provided at the thighs for better and  
25 more comfortable fit.

Figures 10 and 11 show a fifth and a sixth embodiment in the form of a "Bermuda" panty variation wherein thigh extensions 70 and 72, preferably of elasticized material, are provided to  
30 insure a better seal while also providing a better fit. Figure 11 shows a sixth embodiment in which foam material at 76 and 78 is added at the waist and thighs.

It is possible to utilize stretch materials to  
35 insure the diaper fitting wearers of various sizes. Further, the backing sheet may be made breathable as set forth in U.S. Patent 3,989,867. The elastic strips may be shirred for greater efficacy as shown in U.S. Patents Nos. 3,639,917  
40 and 3,912,651.

It will be appreciated that the elastic strips are adhered to the sheets whilst appropriately extended so that after the bonding the composite has the desired degree of extensibility and  
45 retractability necessary to provide the sealing function.

#### CLAIMS

1. A disposable panty comprising front and back panels, the said panels having end edges  
50 attached to each other, the said attached end edges being located at the sides of the panty, each of the said panels including an impervious backing sheet, an absorbent pad, and a face sheet, the face sheets facing each other in the panty, the said  
55 panels each having contraction means located along the sides thereof, the said contraction means being located at or adjacent the top and the bottom of the panty, the contraction means at or adjacent the top forming a waist band, the said  
60 panels being attached to each other at a location medial the ends thereof and adjacent the other contraction means to form thigh holes and a pair of crotch seals to extend about the thighs of the wearer.

- 65 2. A disposable panty as claimed in Claim 1 in which at least the backing sheets of the said panels are integral with each other.

3. A disposable panty comprising elongate front and back panels incorporating an impervious  
70 backing sheet, the backing sheets of the said panels being integrally connected along one end, and bonded together at the other end, the panels also being bonded at a medial location to afford a waist opening and two leg openings, contraction  
75 means being provided at the waist opening and the leg openings.

4. A disposable panty as claimed in Claim 1, 2 or 3 in which the contraction means comprise elasticized strips.

- 80 5. A disposable panty as claimed in Claim 4 in which each panel has an elasticized strip along each of its long sides.

6. A disposable panty as claimed in Claim 4 in which each panel has an elasticized strip along its top side and two elasticized strips arranged end to end along its bottom side.

7. A disposable panty as claimed in any one of Claims 1 to 6 in which the said elasticized strips are bonded to the said backing sheets.

- 90 8. A disposable panty as claimed in Claim 8 in which the said elasticized strips are bonded to the said backing sheets between the said backing sheets and the said absorbent pads.

9. A disposable panty as claimed in any one of  
95 Claims 1 to 8 in which the elasticized strips are located between the edges of the backing sheet and the edges of the absorbent pad.

10. A disposable panty as claimed in any one of Claims 1 to 9 in which the said panels are adhesively bonded together at the said medial  
100 location.

11. A disposable panty as claimed in Claim 1 or Claim 2 and any one of Claims 4 to 10 when appendant to Claim 1 or Claim 2 in which at least  
105 one of the said pairs of end edges are bonded together.

12. A disposable panty as claimed in Claim 11 in which the said edges are bonded by heat sealing.

- 110 13. A disposable panty as claimed in Claim 11 in which the said edges are adhesively bonded to each other.

14. A disposable panty as claimed in any one of Claims 1 to 13 in which at least one of the said  
115 backing sheet and the said facing sheet are of a stretch material.

15. A disposable panty as claimed in any one of Claims 1 to 14 in which the said backing sheet is breathable.

- 120 16. A disposable panty as claimed in any one of Claims 1 to 15 including thigh extensions secured to the crotch portion of the said panty.

17. A disposable panty as claimed in Claim 18 in which the said thigh extensions are of  
125 elasticized waterproof material.

18. A disposable panty as claimed in any one of Claims 1 to 17 including elasticized foam material disposed adjacent the said waist seal and crotch seal.

19. A disposable panty as claimed in any one of Claims 1 to 18 in which the said absorbent pads are of different thicknesses.

20. A disposable panty as claimed in Claim 1 substantially as specifically described herein with reference to Figures 1 to 5, Figure 6, Figures 7 and 8, Figure 9 or Figure 10 or Figure 11 of the accompanying drawings.

21. A process of making a disposable panty which comprises providing a pair of panty panels, each of the said panels having a backing sheet, an absorbent pad, and a facing sheet, the panels having contraction means disposed along the sides thereof, then positioning the panels in overlying relationship, bonding one or both pairs of end edges to each other and bonding the said panels to each other at a location medial the end edges thereof to afford a waist opening and two leg openings.

22. A process of making a disposable panty which comprises providing a pair of panty panels disposed in end to end relationship, each of the said panels having a backing sheet, an absorbent pad, and a facing sheet, the said panels being integrally connected at their juxtaposed ends by at least the said backing sheet, the panels having contraction means disposed along the sides thereof, folding the panels into overlying relationship about the said integral connection, bonding the other end edges to each other and bonding the said panels to each other at a location medial the end edges thereof to afford a waist opening and two leg openings.

23. A process as claimed in Claim 21 or Claim 22 in which the contraction means comprise elasticized strips which are bonded to the backing sheet whilst in an extended state.

24. A process of making a disposable panty as claimed in Claim 21, 22 or 23 in which the said end edges are heat sealed to each other.

25. A process of making a disposable panty as claimed in Claim 21, 22 or 23 in which the said end edges are adhesively secured to each other.

26. A process of making a disposable panty as claimed in any one of Claims 21 to 25 in which the said panels are bonded to each other at said medial location by heat sealing.

27. A process of making a disposable panty as claimed in any one of Claims 21 to 25 in which the said panels are bonded to each other at the said location by adhesive.

28. A process of making a disposable panty as claimed in any one of Claims 21 to 25, in which the said panels are simultaneously bonded to each other at the said end edges and at the said medial location by heat sealing.

29. A process of making a disposable panty as claimed in any one of Claims 21 to 25, in which the said panels are simultaneously bonded to each other at the said end edges and at the said medial location by adhesive.

30. A process as claimed in Claim 21 or Claim 22 substantially as specifically described herein with reference to Figures 1 to 5, Figure 6, Figure 7, Figure 8, Figure 9, Figure 10 or Figure 11 of the accompanying drawings.

31. A disposable panty whenever made by a method as claimed in any one of Claims 21 to 30.

32. A blank for making up into a disposable panty comprising a pair of panty panels disposed in end to end relationship, each of the said panels having a backing sheet, an absorbent pad, and a facing sheet, the said panels being integrally connected at their juxtaposed ends by at least the said backing sheet, the panels having contraction means disposed along the sides thereof, and the said panels each affording a location medial the end edges thereof, and an end location at which the panels can be bonded to each other so as to afford a waist opening and two leg openings.

33. A blank as claimed in Claim 32 in which the contraction means comprise elasticized strips which are bonded to the backing sheet whilst in an extended state.

34. A blank as claimed in Claim 33 in which the said elasticized strips are bonded to the said backing sheets between the said backing sheets and the said absorbent pads.

35. A blank as claimed in Claim 33 or Claim 34 in which the elasticized strips are located between the edges of the backing sheet and the edges of the absorbent pad.

36. A blank as claimed in Claim 33, 34 or 35 in which each panel has an elasticized strip along each of its long sides.

37. A blank as claimed in Claim 33, 34 or 35 in which each panel has an elasticized strip along its top side and two elasticized strips arranged end to end along its bottom side.

38. A blank as claimed in any one of Claims 32 to 37 in which the absorbent pads are of different thicknesses.

39. A blank as claimed in any one of Claims 32 to 38 in which at least one of the said backing sheets and the said facing sheets are of a stretch material.

40. A blank as claimed in any one of Claims 32 to 39 in which the said backing sheet is breathable.

41. A blank as claimed in any one of Claims 32 to 40 including thigh extensions secured to the medial portion of the said panels.

42. A blank as claimed in Claim 41 in which the said thigh extensions are of elasticized waterproof material.

43. A blank as claimed in any one of Claims 32 to 42 including elasticized foam material disposed adjacent the said edges.

44. A blank as claimed in Claim 31 substantially as specifically described herein with reference to Figure 1 of the accompanying drawings.

